

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Stefan BOEHM et al.

Serial No. (unknown)

Filed herewith

METHOD FOR OPERATING AN  
IMAGE SYSTEM OF AN IMAGING  
MEDICAL EXAMINATION DEVICE  
AND MEDICAL EXAMINATION DEVICE

**PRELIMINARY AMENDMENT**

Commissioner for Patents

Washington, D.C. 20231

Sir:

Prior to calculation of the filing fee, please amend the above-identified application as follows:

**IN THE CLAIMS:**

Amend claim 3 as follows:

--3. (Amended) The method as claimed in claim 1, characterized in that the triggering event is derived from a switch-on process performed on the medical examination device (1).--

Amend claim 4 as follows:

--4. (Amended) The method as claimed in claim 1, characterized in that the triggering event is derived from

Stefan BOEHM et al.

a calibration process performed on the medical examination device (1).--

Amend claim 5 as follows:

--5. (Amended) The method as claimed in claim 1, characterized in that the triggering event is generated at a defined point in time before, during or after an image acquisition procedure, in particular before, during or after a patient examination or a scan.--

Amend claim 6 as follows:

--6. (Amended) The method as claimed in claim 1, characterized in that the triggering event is generated by a counting process.--

Amend claim 8 as follows:

--8. (Amended) The method as claimed in claim 1, characterized in that the triggering event is generated by a time measuring process.--

Amend claim 9 as follows:

--9. (Amended) The method as claimed in claim 1, characterized in that after the defect determination (63), a correction process (67) is automatically triggered if a defective pixel was detected.--

Amend claim 11 as follows:

--11. (Amended) The method as claimed in claim 9,

Stefan BOEHM et al.

characterized in that in connection with the defect determination after carrying out a first correction process in which already known image defects are corrected, the corrected image is analyzed in order to determine further defects or defects that are still present, which are corrected in a second correction process.--

Amend claim 14 as follows:

--14. (Amended) The method as claimed in claim 11, characterized in that in the context of the analysis, the pixel-related signals are compared with one or more threshold values.--

Amend claim 15 as follows:

--15. (Amended) The method as claimed in claim 11, characterized in that the analysis result is used to generate a new defect map (53), which describes the detected defect or defects that is or are new or still present, and which is used to effect the correction in the second correction process.--

Amend claim 16 as follows:

--16. (Amended) The method as claimed in claim 11, characterized in that in the context of the first correction process, the image is corrected using an old defect map (50), which describes already known defects.--

Amend claim 17 as follows:

Stefan BOEHM et al.

--17. (Amended) The method as claimed in claim 15, characterized in that the old defect map (50) is updated using the new defect map (53).--

Amend claim 19 as follows:

--19. (Amended) The method as claimed in claim 11, characterized in that a flat-fielding correction of the image is effected in the context of the first correction process.--

Amend claim 20 as follows:

--20. (Amended) The method as claimed in claim 1, characterized in that after the defect determination (63), a message is automatically sent via a data link (47) to a service device (49) if a defective pixel was detected.--

Amend claim 21 as follows:

--21. (Amended) The method as claimed in claim 1, characterized in that a pixel is detected as defective if the assigned signal falls below a minimum value.--

Amend claim 22 as follows:

--22. (Amended) The method as claimed in claim 1, characterized in that a pixel is detected as defective if the noise in the assigned signal exceeds a maximum value.--

Amend claim 23 as follows:

Stefan BOEHM et al.

--23. (Amended) The method as claimed in claim 1, characterized in that the defect determination (63) is carried out on a stored image.--

Amend claim 26 as follows:

--26. (Amended) The examination device as claimed in claim 24, characterized in that the detection device (31) can detect a pixel as defective if the noise in the assigned signal exceeds a maximum value.--

Amend claim 27 as follows:

--27. (Amended) The examination device as claimed in claim 24, characterized by a correction device (41) for automatically eliminating a defective pixel that has possibly been detected, in which case the correction device (41) is connected to the detection device (31) and can be activated by the latter if a defective pixel is detected.--

Amend claim 31 as follows:

--31. (Amended) The examination device as claimed in claim 28, characterized in that the analysis means (42) is designed for comparing the pixel-related signals with one or more threshold values for the purpose of determining a defect.--

Amend claim 32 as follows:

--32. (Amended) The examination device as claimed in claim 28, characterized in that the analysis

Stefan BOEHM et al.

means (42) or the detection device (31) is designed for generating a new defect map (53), which describes the detected defect or defects that is or are new or still present, and the correction device (41) is designed for correcting the image in the second correction process using the new defect map (53).--

Amend claim 33 as follows:

--33. (Amended) The examination device as claimed in claim 32, characterized in that the correction device (41) is designed for correcting the image using an old defect map (50), which describes already known defects, in the context of the first correction process.--

Amend claim 34 as follows:

--34. (Amended) The examination device as claimed in claim 33, characterized in that the detection device (31) or the correction device (41) is designed for updating the old defect map (50) using the new defect map (53).--

Amend claim 35 as follows:

--35. (Amended) The examination device as claimed in claim 28, characterized in that the correction device (41) is designed for carrying out a flat-fielding correction of the image in the context of the first correction process.--

Stefan BOEHM et al.

Amend claim 36 as follows:

--36. (Amended) The examination device as claimed in claim 24, characterized in that the detection device (31) has a data interface (45) for sending a message to a service device (49), in which case the message can be sent automatically by the detection device (31) if a defective pixel is detected.--

Amend claim 37 as follows:

--37. (Amended) The examination device as claimed in claim 24, characterized in that the detection device (31) is connected to an image memory (40), from which it is possible to retrieve an image which was generated by the image system(10) at an earlier point in time.--

Stefan BOEHM et al.

R E M A R K S

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE".

Respectfully submitted,

YOUNG & THOMPSON

By

Benoit Castel

Benoit Castel  
Attorney for Applicants  
Registration No. 35,041  
Customer No. 00466  
745 South 23<sup>rd</sup> Street  
Arlington, VA 22202  
Telephone: 703/521-2297

November 23, 2001

VERSION WITH MARKINGS TO SHOW CHANGES MADE

The claims have been amended as follows:

3. (Amended) The method as claimed in claim 1—or 2,

characterized in that the triggering event is derived from a switch-on process performed on the medical examination device (1).

4. (Amended) The method as claimed in ~~one of~~ claims claim 1—to—3, characterized in that the triggering event is derived from a calibration process performed on the medical examination device (1).

5. (Amended) The method as claimed in ~~one of~~ claims claim 1—to—4, characterized in that the triggering event is generated at a defined point in time before, during or after an image acquisition procedure, in particular before, during or after a patient examination or a scan.

6. (Amended) The method as claimed in ~~one of~~ claims claim 1—to—5, characterized in that the triggering event is generated by a counting process.

8. (Amended) The method as claimed in ~~one of~~ claims claim 1—to—7, characterized in that the triggering event is generated by a time measuring process.

9. (Amended) The method as claimed in ~~one of~~ claims ~~claim 1-to-8~~, characterized in that after the defect determination (63), a correction process (67) is automatically triggered if a defective pixel was detected.

11. (Amended) The method as claimed in claim 9 ~~or 10~~,

characterized in that in connection with the defect determination after carrying out a first correction process in which already known image defects are corrected, the corrected image is analyzed in order to determine further defects or defects that are still present, which are corrected in a second correction process.

14. (Amended) The method as claimed in ~~one of~~ claims ~~claim 11-to-13~~, characterized in that in the context of the analysis, the pixel-related signals are compared with one or more threshold values.

15. (Amended) The method as claimed in ~~one of~~ claims ~~claim 11-to-14~~, characterized in that the analysis result is used to generate a new defect map (53), which describes the detected defect or defects that is or are new or still present, and which is used to effect the correction in the second correction process.

16. (Amended) The method as claimed in ~~one of~~ claims ~~claim 11-to-15~~, characterized in that in the context

of the first correction process, the image is corrected using an old defect map (50), which describes already known defects.

17. (Amended) The method as claimed in ~~claims~~claim 15 and 16, characterized in that the old defect map (50) is updated using the new defect map (53).

19. (Amended) The method as claimed in ~~claims~~claim 11 to 18, characterized in that a flat-fielding correction of the image is effected in the context of the first correction process.

20. (Amended) The method as claimed in ~~claims~~claim 1 to 19, characterized in that after the defect determination (63), a message is automatically sent via a data link (47) to a service device (49) if a defective pixel was detected.

21. (Amended) The method as claimed in ~~the preceding claims~~claim 1, characterized in that a pixel is detected as defective if the assigned signal falls below a minimum value.

22. (Amended) The method as claimed in ~~the preceding claims~~claim 1, characterized in that a pixel is detected as defective if the noise in the assigned signal exceeds a maximum value.

23. (Amended) The method as claimed in ~~one of the preceding claims~~ claim 1, characterized in that the defect determination (63) is carried out on a stored image.

26. (Amended) The examination device as claimed in claim 24 ~~or~~ 25, characterized in that the detection device (31) can detect a pixel as defective if the noise in the assigned signal exceeds a maximum value.

27. (Amended) The examination device as claimed in ~~one of the claims~~ claim 24 ~~to~~ 26, characterized by a correction device (41) for automatically eliminating a defective pixel that has possibly been detected, in which case the correction device (41) is connected to the detection device (31) and can be activated by the latter if a defective pixel is detected.

31. (Amended) The examination device as claimed in ~~one of the claims~~ claim 28 ~~to~~ 30, characterized in that the analysis means (42) is designed for comparing the pixel-related signals with one or more threshold values for the purpose of determining a defect.

32. (Amended) The examination device as claimed in ~~one of the claims~~ claim 28 ~~to~~ 31, characterized in that the analysis means (42) or the detection device (31) is designed for generating a new defect map (53), which describes the detected defect or defects that is or are new

or still present, and the correction device (41) is designed for correcting the image in the second correction process using the new defect map (53).

33. (Amended) The examination device as claimed in ~~one of claims 28 to~~ claim 32, characterized in that the correction device (41) is designed for correcting the image using an old defect map (50), which describes already known defects, in the context of the first correction process.

34. (Amended) The examination device as claimed in ~~claims 32 and~~ claim 33, characterized in that the detection device (31) or the correction device (41) is designed for updating the old defect map (50) using the new defect map (53).

35. (Amended) The examination device as claimed in ~~one of claims~~ ~~claim 28 to~~ 34, characterized in that the correction device (41) is designed for carrying out a flat-fielding correction of the image in the context of the first correction process.

36. (Amended) The examination device as claimed in ~~one of claims~~ ~~claim 24 to~~ 35, characterized in that the detection device (31) has a data interface (45) for sending a message to a service device (49), in which case the message can be sent automatically by the detection device (31) if a defective pixel is detected.

Stefan BOEHM et al.

37. (Amended) The examination device as claimed in one of claimsclaim 24 to 36, characterized in that the detection device (31) is connected to an image memory (40), from which it is possible to retrieve an image which was generated by the image system (10) at an earlier point in time.